

Week 4 (9/10-9/14)

Hey guys, great news! Sort of. Your first exam is this Thursday, September 15, so we'll be holding an SI Exam 1 Review this Monday from 6-8 PM in SGM 124. Tiffany's test taking tips: Remember to breathe, get sleep, practice solving lots of problems to get faster, and double check your work! Oh, and always remember: SIG FIGS AND UNITS! In recent news: researchers at the University of Minnesota found that while both SAT scores and high school grades helped predict academic performance in college, taking into account parents' education and family income had little effect on this relationship! However, they also found that fewer students of lower socioeconomic status were applying to colleges in the first place, so money does factor into an individual's education level.

1. **Balancing equations!**

2. **Stoich:** A bored scientist combusts a 3.44 g of a compound that she knows only contains carbon, hydrogen, and oxygen. 2.06 g of H_2O and 5.04 g of CO_2 are formed as a result. She knows from past experience that the molecular mass of the compound is between 170 and 190 g/mol. What are the empirical and molecular formulas of the compound?

3. Determine how much copper (MM=63.55 g/mol) is produced when 15.0 metric tons of Cu_3FeS_3 (MM = 342.71 g/mol) reacts, giving a 71.4% yield? (1 metric ton = 1000 kg)



4. Hydrogen peroxide, sodium hydroxide (MM=40.0), and borax(MM=201.22) react to form sodium perborate (MM=199.64), a bleach found in laundry detergents.



- a. If 5.74 grams of hydrogen peroxide react with 41.90 g of borax and an excess of sodium hydroxide, what is the limiting reactant?
- b. How much sodium perborate will be produced?
- c. How much reactant will be left in excess?
5. A 67.2g sample of a gold and palladium alloy contains 2.49×10^{23} atoms. What is the composition (by mass) of the gold in the alloy?